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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                 | CONFIRMATION NO.       |
|---|-------------|----------------------|-------------------------------------|------------------------|
| 10/816,007  | 03/31/2004  | Timothy A. Hindle    | H0003993-1622                       | 9568                   |
| 128 7590 01/30/2009<br>HONEYWELL INTERNATIONAL INC.<br>101 COLUMBIA ROAD<br>P O BOX 2245<br>MORRISTOWN, NJ 07962-2245 |             |                      | EXAMINER<br>SCHWARTZ, CHRISTOPHER P |                        |
|   |             |                      | ART UNIT<br>3657                    | PAPER NUMBER           |
|   |             |                      | MAIL DATE<br>01/30/2009             | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/816,007

**Applicant(s)**

HINDLE ET AL.

**Examiner**

Christopher P. Schwartz

**Art Unit**

3657

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7, 8, 11-18, 20 and 26-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 11-18, 20 and 26-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Applicant's response of November 12, 2008 has been received and considered. Claims 1-5,7,8,11-18,20,26-30 are now pending.

***Claim Rejections – 35 USC 102 OR 35 USC § 103***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1- rejected under 35 U.S.C. 102(b) as anticipated by Davis et al. or, in the alternative, under 35 U.S.C. 103(a) as obvious over Davis et al.

Regarding claim 1: Davis discloses a vibration damping and isolation apparatus (col. 3, 1. 10), comprising a fluid, such as silicone, that necessarily has a true fluid mass, a density and a viscosity (col. 4, 11. 56-57), and first (46) and second (48) primary fluid chambers that contain, respectively, a first portion and a second portion of the fluid and are separated by a primary damping annulus (32) that provides a flow path between them (col. 6, 11. 60-64). Davis does not state that the fluid has an effective mass greater than its true mass. However, the effective mass, as defined by the Appellants, is the true mass multiplied by the square of the ratio of the cross-sectional area of the bellows to the cross-sectional area of the damping annulus (Spec. q[ 0040). Hence, if the cross-sectional area of the bellows is greater than the cross-sectional area of the damping annulus, the effective mass is greater than the true mass. Davis discloses that "in the preferred embodiment the cross sectional area of the plurality of secondary fluid paths of one of the extensions 22, 24 is approximately 32 times as large as the cross sectional area of the damping annulus 32" (col. 7, 11.5-9). That is done so "the resistance to flow through the secondary fluid paths 26, 28 [which are approximately equal to the cross-sectional areas of the first (46) and second

(48) primary fluid chambers; fig. 2] is made small as compared to the primary damping annulus 32 to minimize damping by such secondary fluid paths 26, 28" (col. 7, 11. 1-5). Because Davis's first (46) and second (48) primary fluid chamber cross-sectional areas are greater than the cross-sectional area of annular damping annulus 32, the effective fluid mass is greater than the true fluid mass. Thus, in the same manner as the Appellants' apparatus, Davis's apparatus enhances vibration damping and isolation.

Applicant's representative states at page 7 of their remarks that the "attenuation at 100 Hertz of about -68dB" discussed in Davis '070 (col. 4 lines 43) is not the same as applicant's claimed "roll off" of -60dB/decade. Although Davis states that at 100 Hertz the attenuation is about -68dB (for a three parameter system), as discussed previously by the Board of Appeals, this can be said to encompass applicant's limitation of a roll off of -60dB/decade. This would seem to be indicated by the changing (and steeper) slopes shown by the lines 204,206,208,210 in graph of figure 1C of Davis '070. Applicant's reference the slope in figure 1C as indicating a "roll off" of about -40dB but it also appears to show a "roll off" of about -68dB -- further down towards the lower right-- as the slopes of the lines change. Therefore, it is very probable that the limitation of a "roll off" of -60dB/decade is inherent in Davis '070 (but at some other frequency).

Notwithstanding this argument, however, it is notoriously well known in the art that the mass of the fluid in such dampers can be changed to meet predetermined or specific applications. The previously cited references to Kawamata col. 4 lines 25-46 or

Jones col. 7 lines 40-50 (neither of which is applied) teach this. The newly cited reference to deFontenay '490 (not applied) at col. 6 lines 24-37 clearly teaches this. Such a change of mass to the fluid in Davis '070 would have been obvious.

Claims 2 and 3: The cross-sectional area of Davis's annular damping annulus 32 necessarily can be changed to achieve the desired ratio of that cross-sectional area to the cross-sectional areas of extensions 22 and 24 and the related cross-sectional areas of the first (46) and second (48) primary fluid chambers (col. 6, 1. 66 - col. 7, 11. 10). Consequently, Davis's apparatus is capable of permitting active tuning of the effective mass of the fluid.

Claims 4 and 5: Davis's apparatus necessarily is capable of supporting a payload having a fixed mass (col. 5, 11. 21-24), including payloads having a mass between the fluid's true mass and effective mass.

Claim 7: The density and, correspondingly, the mass, of Davis's fluid necessarily can be changed.

Claim 16: A comparison of Davis's figure 2 with the Appellants' figure 3 shows that Davis's apparatus includes the recited shaft, piston, first and second extensions, and primary and secondary isolation means. As set forth above regarding the rejection of claim 1, Davis's apparatus includes the Appellants' fourth parameter.

Claims 17 and 18: The cross-sectional area of Davis's annular damping annulus 32 necessarily can be changed to achieve the desired ratio of that cross-sectional area to the cross-sectional areas of extensions 22 and 24 and the related cross-sectional areas of the first (46) and second (48) primary fluid chambers (which correspond to the Appellants' primary isolation means) (col. 6, 1. 66 - col. 7, 11. 10). Consequently, Davis's apparatus is capable of permitting active tuning of the effective mass of the fluid.

Claim 20: Davis's fluid mass necessarily is capable of being changed, thereby changing the fluid mass effect.

6. Claims 8,11-15,26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. in view of Kawamata or Jones.

Regarding claims 8,26 lacking in Davis is a specific discussion of the amplification factor of the effective fluid mass to the true fluid mass and the relationship of these masses to that of a payload mass.

Applicant's state on page 10 paragraph 0040 what the relationship is between the effective fluid mass ( $M_{\text{effective}}$ ) to the true fluid mass ( $M_{\text{true}}$ ). They describe the amplification factor on page 11 paragraph 0050. At page 9 paragraph 0035 applicant's state "Depending on the characteristics desired by the designer, different ratios (of effective fluid mass to payload mass) can be chosen". Such design changes would be obvious to the ordinary skilled worker in the art, as well, in light of this statement and the teachings of the combined references above.

It is notoriously well known in the art to tune fluid mounts and dampers to damp specific vibrational frequencies by varying the respective areas of fluid chambers, the cross sectional areas of fluid passages, the areas of pistons etc. and/or the use of different fluids with different densities, or other properties, to create, change, or make use of a fluid inertia effect. This is generally taught by Kawamata in column 4 or Jones in column 7 lines 37-50. Note the discussion of the "fluid slug" throughout the specification of Jones. Although not applied see also deFontenay '490 col. 6 lines 24-37.

The ordinary skilled worker in the art would have found it obvious at the time of the invention to have adjusted at least one of these well known variable parameters in the device of Davis, as taught by either Kawamata or Jones, to provide a damper which makes use of the fluid inertia effect (inherent in Davis) to isolate a specific range of vibrations.

Claim 11: Davis's first (46) and second (48) primary fluid chambers provide stiffness (col. 3, 11. 21-32).

Claim 12: Davis's annular damper 32 provides a shear force (col. 6, 11. 64-66).

Claim 13: Because, as discussed above regarding claim 1, Davis's apparatus is the same as that of the Appellants, it provides the same second spring force as the Appellants' apparatus.



Claim 14: Davis's effective mass is, by the Appellants' definition (Spec. ~ 0040), proportional to the square of the ratio of the cross-sectional area of the first (46) and second (48) primary fluid chambers to the cross-sectional area of damping annulus 32.

Regarding the rest of the claims these requirements are met in view of the explanation given above, the strong similarity of the features of the instant application with the Davis patent and the teachings of the references to Kawamata or Jones and the common knowledge in the art regarding the dimensional changes to the structure that may be made to take advantage of the damping capabilities of fluids.

### ***Response to Arguments***

7. Applicant's arguments filed November 12, 2008 have been fully considered but they are not persuasive. Applicant's representative states at page 7 of their remarks that the "attenuation at 100 Hertz of about -68dB" discussed in Davis '070 (col. 4 lines 43) is not the same as applicant's claimed "roll off" of -60dB/decade. He also states that "Although unstated in the text Davis actually shows a roll-off of about -40dB.", referencing the slope of the chart in figure 1C. But as previously discussed it appears that this slope changes to a "roll off" to at least -68dB/decade in the three parameter system.

Applicant's also are of the opinion that because their specification states "depending on the characteristics desired by the designer, different ratios (of effective mass to payload mass) can be chosen", that the examiner somehow used this statement in rejecting the claims.

This, simply, is not the case. It is old and well known that these physical parameters can be altered in damping devices to accommodate specific applications. This is fairly suggested by Kawamata and Jones. To further illustrate the point the reference to deFontenay (not applied) has been cited.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Schwartz whose telephone number is 571-272-7123. The examiner can normally be reached on M-F 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rob Siconolfi can be reached on 571-272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher P. Schwartz/  
Primary Examiner, Art Unit 3683

1/27/09